

WHAT IS CLAIMED IS:

*1. A core structure of an integral heat-exchanger, comprising:
at least two first heat exchanger tubes which extend in
parallel with each other;*

5 *at least two second heat exchanger tubes which extend in
parallel with each other, the two second heat exchanger tubes
being juxtaposed with the first heat exchanger tubes; and
a corrugated fin including a corrugated first part interposed
between said first heat exchanger tubes, a corrugated second
10 part interposed between said second heat exchanger tubes and a
flat connection part arranged between the corrugated first and
second parts,*

15 *said corrugated first part of the fin being formed with a
plurality of first louvers each extending substantially between the
two first heat exchanger tubes;*

20 *said corrugated second part of the fin being formed with a
plurality of second louvers each extending substantially between
the two second heat exchanger tubes, (the innermost one) of said
second louvers being positioned away from (the innermost end) of
said corrugated second part of the fin by a given length; and
said flat connection part being formed with a third louver in
the vicinity of (the innermost one) of said first louvers, said third
louver being constructed to obstruct a heat transfer in the fin.*

25 2. A core structure as claimed in Claim 1, in which said first
louvers and second louvers are constructed to improve a heat
radiation of the fin, and in which each of said first, second and
third louvers extends in a direction perpendicular to the direction
in which air flows.

30 3. A core structure as claimed in Claim 1, in which the
distance between said third louver and the innermost one of said
first louvers is greater than the distance between adjacent two of

said first louvers, said first louvers being arranged at a constant pitch.

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4. A core structure as claimed in Claim 1, in which second heat exchanger tubes are located behind said first heat exchanger tubes with respect to a direction in which air flows.

5. A core structure as claimed in Claim 4, in which said first heat exchanger tubes and said corrugated first part of the fin are arranged to treat with a lower temperature and in which said second heat exchanger tubes and said corrugated second part of the fin are arranged to treat with a higher temperature.

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6. A core structure as claimed in Claim 5, in which said first heat exchanger tubes are arranged to flow therethrough a refrigerant of an automotive air conditioner and said second heat exchanger tubes are arranged to flow therethrough an engine cooling water.

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7. A core structure as claimed in Claim 1, in which the distance between said third louver and the innermost end of said corrugated second part of the fin is less than 12mm, and in which said given length is greater than a pitch at which said second louvers are arranged.

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8. A core structure as claimed in Claim 1, in which the length between the third louver and the innermost one of said second louvers is substantially equal to the length of said flat connection part of said fin.

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9. A core structure as claimed in Claim 1, in which a front cluster including said first louvers and said third louver and a rear cluster including said second louvers are arranged

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Claim 9
symmetrically with respect to said flat connection part of said fin.

10. A core structure as claimed in Claim 9, in which a center line of said corrugated fin is located in a center portion of said flat connection part.

11. A core structure as claimed in Claim 1, in which the width of the first heat exchanger tube is different from that of the second heat exchanger tube.

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12. A core structure as claimed in Claim 11, in which the number of louvers provided in a front cluster including said first louvers and said third louver is different from that of the louvers provided in a rear cluster including said second louvers.

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Claims 12-13
13. A core structure of an integral heat-exchanger, comprising: at least two first heat exchanger tubes which extend in parallel with each other;

20 at least two second heat exchanger tubes which extend in parallel with each other, said second heat exchanger tubes being juxtaposed with said first heat exchanger tubes; and

25 a corrugated fin including a corrugated first part interposed between said first heat exchanger tubes, a corrugated second part interposed between said second heat exchanger tubes and a flat connection part arranged between the corrugated first and second parts,

30 said corrugated first part of the fin being formed with a plurality of first louvers each extending substantially between the two first heat exchanger tubes;

35 said corrugated second part of the fin being formed with a plurality of second louvers each extending substantially between the two second heat exchanger tubes; and

40 said flat connection part being formed with a plurality of

louvers
radiation
portions

heat radiation portions, each radiation portion being constructed not to largely deteriorate the heat transfer in the fin.

14. A core structure as claimed in Claim 13, in which said heat radiation portions are auxiliary louvers, each auxiliary louver being smaller in size than each of the first and second louvers.

15. A core structure as claimed in Claim 14, in which each of said auxiliary louvers extends in a direction perpendicular to the direction in which air flows.

16. A core structure as claimed in Claim 13, in which said heat radiation portions are projections integrally formed on the flat connection part of the corrugated fin.

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17. A core structure as claimed in Claim 13, in which said heat radiation portions are raised parts which are formed by cutting and raising the cut portions.

20 18. A core structure as claimed in Claim 13, in which the distance between the innermost one of said corrugated first part of the fin and the innermost one of said corrugated second part of the fin is less than 12mm.

25 19. A core structure as claimed in Claim 1, in which the number of the louvers provided in a front cluster including said first louvers and said third louver is different from that of the louvers provided in a rear cluster including said second louvers, and in which said flat connecting part of the corrugated fin is formed with a plurality of heat radiation portions which are located closer to the corrugated second part than the corrugated first part, each radiation portion being constructed not to largely deteriorate the heat transfer in the fin.

louvers
radiation
portions

20. A core structure as claimed in Claim 19, in which said heat radiation portions are auxiliary louvers, each auxiliary louver being smaller in size than each of the first, second and third louvers.

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21. A core structure as claimed in Claim 20, in which each of said auxiliary louvers extends in a direction perpendicular to the direction in which air flows.

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22. A core structure as claimed in Claim 19, in which said heat radiation portions are projections integrally formed on the flat connection part of the corrugated fin.

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23. A core structure as claimed in Claim 19, in which said heat radiation portions are raised parts which are formed by cutting and raising the cut portions.

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24. A core structure as claimed in Claim 19, in which the distance between the innermost one of said corrugated first part of the fin and the innermost one of said corrugated second part of the fin is less than 12mm.

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